

seeking SUD treatment. Neurobiological and neurocognitive differences are present between ADHD patients with and without SUD, which together may partially explain the reduced effectiveness of methylphenidate in adult ADHD patients with SUD.

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## W008

### Treatment of ADHD with cannabinoids

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**Introduction** Adults with ADHD describe self-medicating with cannabis, with some reporting a preference for cannabis over ADHD medications.

**Objectives** The experimental medicine in ADHD-cannabinoids study was a pilot randomised placebo-controlled experimental study of a cannabinoid medication, Sativex oromucosal spray, in 30 adults with ADHD.

**Methods** The primary outcome was cognitive performance and activity level using QbTest. Secondary outcomes included ADHD and emotional lability (EL) symptoms.

**Results** Thirty participants were randomly assigned to the active ( $n=15$ ) or placebo ( $n=15$ ) group. For the primary outcome, no significant difference was found in the ITT analysis although the overall pattern of scores was such that the active group usually had scores that were better than the placebo group (Est = -0.17, 95%CI -0.40 to 0.07,  $P=0.16$ ,  $n=15/11$  active/placebo). For secondary outcomes, Sativex was associated with non-significant improvements in hyperactivity/impulsivity ( $P=0.03$ ), a cognitive measure of inhibition ( $P=0.05$ ), inattention ( $P=0.10$ ) and emotional lability. Per-protocol effects were higher.

**Conclusion** Results did not meet significance following adjustment for multiple testing. One serious (muscular seizures/spasms) and three mild adverse events occurred in the active group and one serious (cardiovascular problems) adverse event in the placebo group. Adults with ADHD may represent a subgroup of individuals who experience a reduction of symptoms and no cognitive impairments following cannabinoid use. This provides some preliminary evidence in support of the self-medication theory of cannabis use in ADHD. A larger trial is warranted.

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## W009

### Guidelines for managing ADHD and substance use disorders

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Guideline for managing ADHD and substance use disorders (SUD) Frieda Matthys, MD, PhD.

**Background** Despite the high prevalence of ADHD in adults with SUD and the availability of an approved guideline, under diagnosis and inadequate treatment still persist. This comorbidity associates with reduced treatment effectiveness, making successful treatment in adults with ADHD and SUD a challenge.

**Methods** The guideline of 2010 for recognizing and treating adult ADHD in patients with SUD is updated in 2016, in cooperation

with caregivers, of the addiction centers in Belgium and based on research literature and clinical experience. The English translation is discussed by an international group of clinicians and experts to result in a consensus statement via ICASA (International Collaboration on ADHD and Substance Abuse).

**Results** This consensus presents a useful guide for the diagnosis and treatment of ADHD and SUD. Due to the lack of scientific evidence on some of the topics, the guide is a combination of evidence based and practice based recommendations.

**Conclusion** The management of ADHD in patients with SUD remains a challenge. Diagnosis is complicated by SUD symptoms and by the skepticism associated with the recognition of ADHD in adults. The treatment is hampered by high relapse rates and reduced effectiveness of the currently available pharmacotherapies. Combining psycho- and pharmacotherapy in an integrated treatment that covers both ADHD and SUD, may help to keep these patients in treatment.

A Dutch manual for the integrated treatment of ADHD and SUD is being developed.

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## Workshop: big data in psychiatry. unprecedented opportunities, new strategies

### W010

#### Permutations and computational power: A molecular cascade analysis to approach big data in psychiatry

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In the last few years, we conducted a number of molecular pathway analyses on the genetic samples provided by the NIMH. The molecular pathway approach accounts for the polygenic nature of the most part of psychiatric disorders. Nevertheless, the limits of this approach including the limited knowledge about the function of the genes, the fact that longer genes have higher probability to harbour variations significantly associated with the phenotype under analysis and the false positive associations for single variations, demand statistical control and bio-statistical knowledge. Permutations are a methodology to control for false positive associations, but their implementation requires that a number of criteria are taken into account: 1) the same number of genes and the same number of variations of the index pathway must be simulated in order to limit the bias of selecting significantly longer or shorter genes; 2) a sufficient number of permuted pathways is created (10E5 to 10E6 depending on computational resources) which demands higher computational power; 3) the correct statistical thresholds are identified and discussed; 4) some pathways might be over-represented and the source of information must be constantly updated. The tools for running a molecular pathway analysis (R Foundation for Statistical Computing, 2013) when interacting with a supercluster PC and the international bioinformatic datasets (Embase, NIMH and others), together with the critical steps of bioinformatics scripting (bash language) are described and discussed.

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